

Giovanni News

From the Editor:

Well, January 2015 went by very quickly. We had many different things to do at the end of December and the beginning of January, some of which we'll discuss here.

Giovanni-4 development is moving along very well. Many new data sets have been added, in particular, data from the Ozone Monitoring Instrument (OMI). This addition provides data on several different atmospheric trace gases—including ozone, of course. This issue has an article about the OMI data in Giovanni-4.

We wrapped up the 2014 Giovanni publication count with a higher number than in any previous year. We enjoy seeing an increasing number of publications every year; but, rather than the actual numbers, it's more important to see the broad range of use of the data and visualizations acquired from Giovanni. In this issue, we have a short summary of some papers that caught our attention. Next month, we'll look at the "most interesting" papers from the latter half of 2014.

Another end-of-year activity that takes place at the Goddard Earth Sciences Data and Information Services Center is the annual compilation of our "Top 10" highlights. Some of these involve Giovanni. Because we had them put on a cake this year, you'll also get to see our highlights, and the cake.

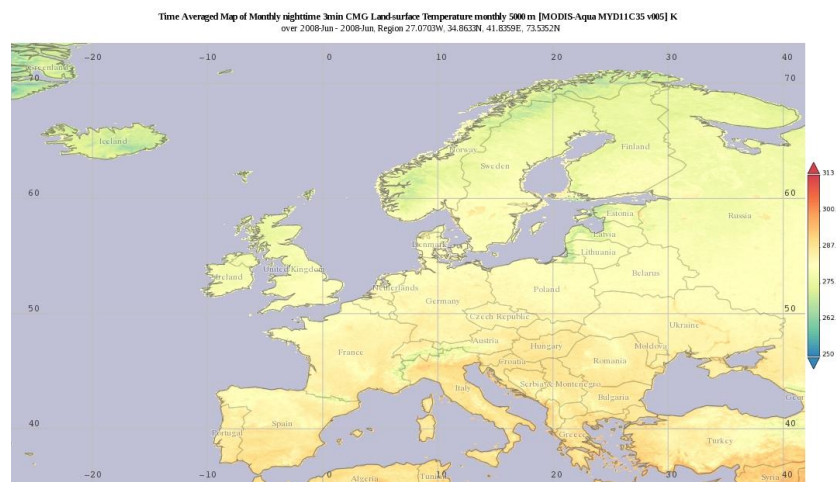
Jim Acker, *The Giovanni News* Editor

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Nighttime MODIS Surface Temperatures in Europe – a Federated Giovanni Preview

The Federated Giovanni project will allow Giovanni -4 to serve data from several different data centers. One of the centers is the Land Processes DAAC in Sioux Falls, South Dakota. MODIS temperature data and vegetation indices will be acquired from the LPDAAC. The image below shows nighttime MODIS monthly temperatures for June 2008, using a 65-hue color palette. The palette range is 250-313 K (-23 to 40 degrees C).



Giovanni Publication Count for 2014

Since 2004, the first year Giovanni was cited in (three) research papers, the number of such papers has increased every year, including 2014, with a count of 226 papers accrued by the end of December. The total number of publications of research which used Giovanni, including the first three from 2004, now stands at **1,086**.

Below are short summaries of three papers from the most recent update.

- Marine biologists have wondered and speculated about where baby sea turtles go after they swim boldly into the ocean following hatching on the beach. However, until now, it has been extremely difficult to track these little turtles. Mansfield et al. described the use of small solar-powered satellite transmitters to follow the movements of juvenile loggerhead turtles. These transmitters have helped determine where the turtles live as they forage and grow. Reminiscent of the friendly turtles in *Finding Nemo*, the young turtles move rapidly when they surf the currents circling the North Atlantic Gyre. They also prefer to stay in warm, clear offshore waters that provide a thermal benefit and also protective cover (like the floating *Sargassum* plant) to shield them from predators, which makes the Sargasso Sea an ideal environment. (Mansfield, K.L., Wyneken, J., Porter, W.P., and Luo, J. (2014) *First satellite tracks of neonate sea turtles redefine the 'lost years' oceanic niche*. **Proceedings of the Royal Society B**, 281: 20133039. doi:10.1098/rspb.2013.3039.) [For more on this research, read the *Science* magazine article, ["Where sea turtles spend their lost years."](#)]
- The vegetation requirement for feeding livestock in the sub-Saharan Sahel region of Africa is a main factor determining the population of livestock that the region can support. Turner et al. used the Normalized Difference Vegetation Index (NDVI) to evaluate the factors determining the optimum distances livestock travel to find green vegetation in this region. (Turner, M.D., Butt, B., Singh, A., Brottem, L., Ayantunde, A., and Gerard, B. (2014) *Variation in vegetation cover and livestock mobility needs in Sahelian West Africa*. **Journal of Land Use Science**, doi:10.1080/1747423X.2014.965280.)
- *Winter's Tale* was a recently-released romantic-fantasy movie, but in *Winter Tales: the dark side of planktonic life*, the authors were concerned with the lives of plankton during the dark months of winter in northern polar regions. They determined that some photosynthetic organisms, such as dinoflagellates, can survive through the low sunlight conditions of winter. They also determined that predatory zooplankton don't go into a dormant state during winter, as had been previously believed, but apparently continue to feed. (Blachowiak-Samolyk, K., Wiktor, J.M., Hegseth, E.N., Wold, A., Falk-Petersen, S., and Kubiszyn, A.M. (2014) *Winter Tales: the dark side of planktonic life*. **Polar Biology**, Special 'Polar Night' Issue, 1-14.)



Livestock in the Sahel region of Africa, such as these goats in Burkina Faso, may rely on sparse vegetation for grazing. Finding sufficient vegetation can require the livestock to travel considerable distances, which may be a factor determining how much livestock the region can support.

Taking the Cake (2014 GES DISC "Top 10" Highlights)

The picture below is the cake that was served at the annual NASA Goddard Space Flight Center science poster party blowout in January.



Here's the "key" to the cake:

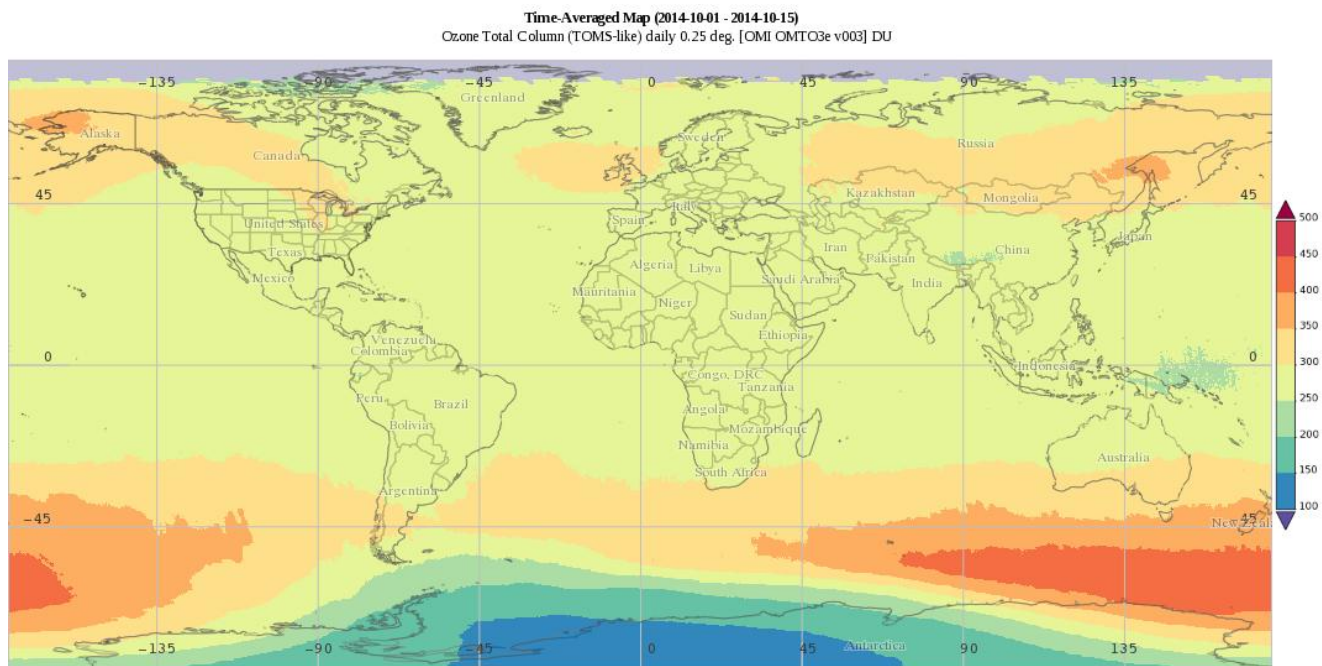
1. **Left, top:** Giovanni-4 development progresses to new milestones; 2014 has the most Giovanni-related journal publications in a calendar year.
2. **Left, center:** AIRS Version 5 IR-Only Level 2 and Level 3 CO₂ data products are released.
3. **Left, bottom:** OMI releases a new version of the atmospheric formaldehyde data product.
4. **Middle-left, top:** NLDAS releases VIC model data, archived and supported by the GES DISC; NASA-USGS collaboration on NLDAS data leads to new data analysis options.
5. **Middle, bottom:** Solar Radiation and Climate Experiment (SORCE) Version 16 Total Solar Irradiance Data are Released.
6. **Middle-right, top:** First data products from the Orbiting Carbon Observatory -2 (OCO-2) are archived and distributed by the GES DISC.
7. **Right, top:** Reprocessed (reformatted) data products from Nimbus 6 are archived and released by the GES DISC.
8. **Right, 2nd from top:** The GES DISC hosts the 2nd Gregory G. Leptoukh Online Giovanni Workshop.
9. **Right, 3rd from top:** AIRS Version 6 reprocessing is completed.
10. **Right, bottom:** First data products from the Global Precipitation Measurement (GPM) mission become available from the GES DISC.

OMI Data Portal Transfers from G3 to G4

The GES DISC has integrated all available Aura OMI Level-3 gridded data into the new Giovanni-4 from the existing Giovanni-3. The Ozone Monitoring Instrument (OMI), on the Aura satellite, has been making daily measurements for over 10 years, since October 2004.

Giovanni allows users to explore and visualize OMI data products, including ozone, NO₂, SO₂, aerosols, ultraviolet (UV) irradiances, and reflectivity. This G3 to G4 transfer marks the first successful transition of an entire existing Giovanni-3 portal into the new Giovanni-4 infrastructure and will allow for faster processing and visualizations of OMI data.

OMI Ozone Total Column (TOMS-like), averaged over the period October 1-15, 2014, plotted with Giovanni-4.



Get a new perspective
by looking at Earth
with NASA data in Giovanni
<http://giovanni.gsfc.nasa.gov>